User's Manual
XRouter Pro
(MIH-130)

Macsense®

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FCC Notice

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide protection against harmful interference in residential installations. This equipment generates radio frequencies that may cause interference with radio communications if not used in accordance with the instructions. Interference may even occur with proper installation. If this equipment causes interference, the user is encouraged to correct the interference with one or more of the following measures:

1. Reorient or relocate the receiving antenna.

2. Increase the separation between the equipment and receiver.

3. Connect the equipment into an outlet on a circuit that is separate from the one to which the receiver is connected.

4. Consult the dealer or an experienced radio/television technician for help.

Safety Precautions

1. Follow all warnings and instructions marked on the product.

2. Slots and openings on the device are provided for ventilation. To protect it from overheating, these openings must not be blocked or covered.

3. Do not use or store this product in an environment that exceeds temperature and humidity specifications. Do not place this product near a radiator or heat register, or in a built-in installation unless adequate ventilation is provided.

4. Before cleaning this product, unplug from wall outlet. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

5. Do not place cords or cables where they may be walked on or tripped over.

6. Be sure to comply with any applicable local safety standards or regulations.

7. General purpose cables are provided with this product. Any cables or other requirements mandated by local authority are your responsibility.

8. Cables that are attached to devices in different locations that have different power sources and grounding may have hazardous voltage potentials. Consult a qualified electrical consultant before installing the product to see if this phenomenon exists and, if necessary, take corrective action.

9. Never touch annunciated telephone wires or terminals unless the line has been disconnected.

10. Avoid using telephone equipment or installing the product during an electrical storm.

11. Never install telephone jacks, lines, network cables, this product, or power connections in wet locations.

12. Never spill liquid of any kind on the product.

Table of Contents

ABOUT THIS MANUAL

This user manual describes how to connect a LAN to the Internet using the XRouter Internet Sharing Hub, MIH-130. This manual assumes you are familiar with the basics of personal computing and network environments. The material is organized as follows:

Chapter	Content
Introduction	Describes the features and main applications of the XRouter Pro
Before You Start	Describes the environment needed to set up the XRouter Pro
Easy Installation	Describes how to install the XRouter Pro for ordinary applications
Advanced Configuration	Describes the configuration options for the XRouter Pro
Troubleshooting	Lists problems and solutions one might encounter when using the XRouter Pro
Appendix A	Hardware Description
Appendix B	Specifications
Appendix C	Glossary

INTRODUCTION

Thank you for purchasing the XRouter Pro MIH-130 Internet Sharing Hub. The XRouter Pro functions as an easy-to-use communication device that allows you to connect a local area network (LAN) to the Internet affordably. With the XRouter Pro you can get as many as 252 Macintosh or PC users online simultaneously through just one cable line or DSL, and one ISP account. The XRouter Pro installs quickly and easily, and best of all, it's a breeze to use.

Sharing Internet Access

The XRouter Pro provides high-speed Internet access to multiple users by splitting the bandwidth from a cable line or from DSL (Digital Subscriber Line) into tiny portions and then routing these bandwidth "slices" to almost any number of Internet users. The fewer the number of users online at any one time, the faster the service each individual receives. Internet users on different nodes are not limited to looking at the same Web pages. Each node is functionally independent from the other nodes connected to the XRouter Pro.

Modems Supported

The XRouter Pro supports cable modems and DSL modems. The XRouter Pro has one WAN (Wide Area Network) port for connecting the unit to either a cable modem or a DSL modem. Either technology should provide more than enough bandwidth to accommodate the needs of even large groups of Internet users.

Built-in DHCP Server

The XRouter Pro's built-in DHCP Server dramatically reduces the configuration and maintenance effort by allowing you to automatically configure the TCP/IP setting of computers over a local area network.

4-Port Switched Ethernet Hub Inside

In addition to providing Internet sharing capability, the XRouter Pro also functions as an Ethernet hub, offering four 10/100BASE-T switched RJ-45 ports that allow you to connect a series of computers to form a small LAN.

Easy Configuration

The XRouter Pro can be configured through a Web browser, and features Web-based management for a simple, intuitive set up.

Virtual Server

Internet users can set up an in-house Web server, such as WWW or FTP, through the XRouter Pro's Virtual Server mapping function. The Virtual Server allows you to select a particular computer in your network to respond to outside Internet requests.

Security

The XRouter Pro provides firewall-like security through NAT (Network Address Translation) to prevent unauthorized Internet users from accessing internal files. It can also filter out Internet requests from certain nodes on a local network for administrative purposes.

NAT (Network Address Translation)

The MIH-130 features NAT (Network Address Translation) as a means of translating private IP addresses into a global IP address that is, in turn, registered to the Internet. NAT essentially masks local IP addresses to the outside world, allowing a group of Internet users to share a single ISP account (which means you don't have to buy separate accounts for each user).

BEFORE YOU START

Package Overview

Please check to make sure your XRouter Pro package includes the items listed below before setting up your XRouter Pro.

___ an XRouter Pro

___ a power adapter

___ this user manual

___ a Category-5 UTP cable with RJ-45 connectors

Items Required

___ an account from an ISP (Internet Service Provider)

___ a cable line or DSL

___ a cable modem or DSL modem

___ additional UTP cables with RJ-45 connectors (for additional computers)

System Requirements

• Computer equipped with 10BASE-T Ethernet connection interface that supports TCP/IP protocol

• Windows 95/98/2000, Windows NT 4.0 or later versions

• Mac OS 7.5.3 or later versions

• Netscape Communicator 4.0 or above (Microsoft Internet Explorer 4.0 or later versions are necessary for Web configuration.)

(NOTE: For future firmware upgrades, one of the operating systems listed above is needed.)

EASY INSTALLATION

Hardware Installation

Before connecting the XRouter Pro to your LAN please verify that your cable or DSL service is active and operating correctly. If you are experiencing difficulties with your cable or DSL service, please contact your service provider before proceeding with this installation.

Connecting the XRouter Pro to Your Modem

After verifying that your cable or DSL service is functioning properly, connect your cable modem or DSL modem to the XRouter Pro by following the instructions below:

1. If you have not already done so, disconnect the Ethernet cable from the computer that is currently connected to the DSL or cable modem.
2. Plug the RJ-45 connector from this cable into the WAN (Wide Area Network) port on the back panel of the XRouter Pro. (See Figure 1.1)
3. Leave the other end of this Ethernet cable connected to the DSL modem or cable modem.
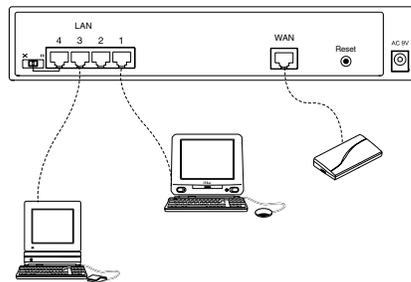
Connecting Computers to the XRouter Pro

When you have finished connecting the XRouter Pro to your DSL or cable modem, you can begin connecting the Macintosh or PC computers in your local area network to the XRouter Pro. There are two common methods for connecting the computers in your LAN to the XRouter Pro: (1) plugging computers directly into the XRouter Pro, and (2) connecting the XRouter Pro to your LAN hub.

To connect computers directly to the XRouter Pro:

(**NOTE**: You will need an Ethernet cable for each additional computer you plan on connecting to the XRouter Pro.)

1. Plug one RJ-45 connector (of a standard twisted-pair Ethernet cable) to the Ethernet port on your computer.

2. Plug the other end of this cable to any one of the XRouter Pro's four LAN ports (located on the left side of the XRouter Pro's rear panel. Refer to Figure 1.1)

3. Repeat steps 1 and 2 for each computer you wish to provide Internet access until all four XRouter Pro LAN ports are filled.

(**NOTE**: To connect more than four computers to the XRouter Pro, simply plug additional computers into a network hub and then plug this hub into the XRouter Pro's uplink port. Read below for further instructions.)

To connect an existing LAN to the XRouter Pro:

As an alternative to connecting computers directly into the XRouter Pro's LAN ports, you can also connect a pre-existing network of computers to the XRouter Pro by uplinking your network's central LAN hub to the XRouter Pro's uplink port. (See Figure 1.2)

To connect a LAN hub to the XRouter Pro's uplink port:

1. Set the DIP switch (located on the XRouter Pro's rear panel just left of the No. 4 LAN port) from "straight" to "crossover" mode.

Switch to left for crossover mode — Switch to right for normal mode

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2. Plug one RJ-45 connector (of a standard twisted-pair Ethernet cable) to the XRouter Pro's No. 4 LAN port.

3. Plug the other end of this Ethernet cable into an available port on the network hub.

   (**NOTE**: Multiple network hubs can be connected to the XRouter Pro's LAN ports No.1-3 if these hubs are equipped with uplink ports. By daisy-chaining a series of hubs, you can connect up to 252 users to the XRouter Pro.)
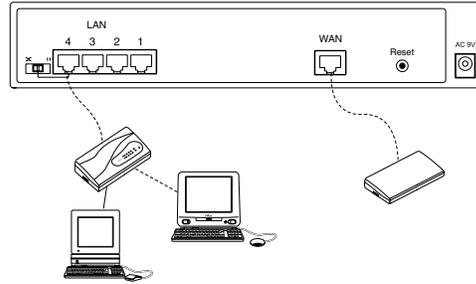
Connecting the Power Supply

To provide your XRouter Pro with power:

1. Plug the power adapter of the XRouter Pro into an AC power outlet.

2. Plug the other end of the power adapter cable into the power receptacle on the rear panel of the unit.

3. The Power LED on the XRouter Pro's front panel should be lit immediately.

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<u>Software Configuration</u>

Setting Up TCP/IP

Congratulations on installing the XRouter Pro's hardware! In the next pages we will show you how to enable communication between the XRouter Pro and its managing and client computers.

Part of the process of enabling communication involves setting the IP addresses for the computer that will be directly managing the XRouter Pro's operations and the client computers that will be receiving Internet access from the XRouter Pro. These computers must have their IP addresses configured such that they share the same subnet numbering scheme as the XRouter Pro's default IP address. We will explain this in more detail later in the chapter.

Configuring the IP addresses of the managing and client computers is a simple process that can be performed through your computer's control panel. We have provided instructions for the configuration process for both Macintosh and PC users. Find the appropriate set of instructions in the pages that follow.

Windows 95/98 TCP/IP Configuration of Computers

1. Double-click the **Control Panel** icon in **My Computer** folder.

2. From the **Control Panel,** double-click the **Network** icon. The network interface card (installed on your computer) appears along with the network protocol on the <u>Configuration</u> list.

3. Double-click **TCP/IP** protocol on the list. If **TCP/IP** does not appear on the list, you must install the TCP/IP protocol first as illustrated in step 4. Clients with TCP/IP already installed may skip to step 5.
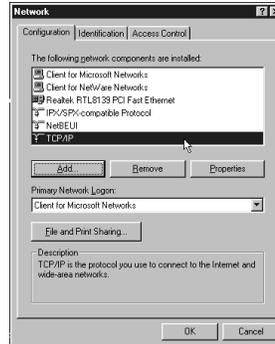
4. To install the TCP/IP protocol:

    a. Keep your copy of Windows 95/98 CD-ROM on hand. (You will need it for this installation.)

    b. Click the **Add...** button from the Configuration list of the Network window. A new window appears.

    c. Double-click **Protocol**. Then, in the Select Network Protocol window, choose **Microsoft** on the Manufacturers list, and select **TCP/IP** on the right side of the list.

    d. Follow the instructions that appear on the monitor to complete the installation.

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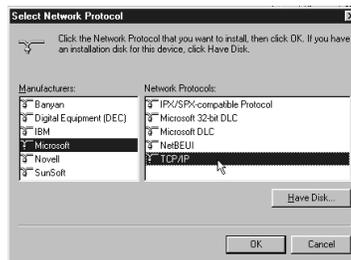
5. After double-clicking the installed **TCP/IP** protocol, the TCP/IP properties window appears. To let the computer's TCP/IP values be automatically assigned by the XRouter Pro's DHCP server:

    a. Click the IP Address tab from the TCP/IP properties window.

    b. Select the item **Obtain IP address automatically**. The XRouter Pro automatically assigns values for the computer's Gateway, DNS Configuration, and IP Address.
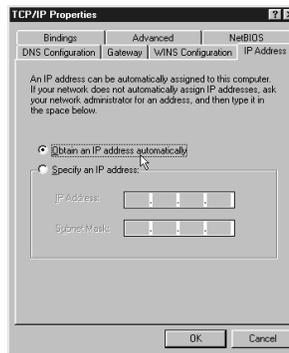
6. After specifying the settings of TCP/IP click **OK** and then **restart** Windows to allow the settings to take effect.

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Assigning TCP/IP Values Manually

If you already have a DHCP server on the network, or if you prefer not using the XRouter Pro's DHCP server to assign TCP/IP values automatically, you can input these values manually.

To enter values for the managing computer's address manually:

1. Click the **IP Address** tab from the TCP/IP properties window.

2. In the IP Address field enter **"192.168.1.x"** where x is any variable of your choice ranging from 2 - 252. Enter **255.255.255.0** in the Subnet Mask field.

   (**NOTE**: No two computers on the same LAN can have the same IP address or an IP address conflict will occur.)

3. Click the **DNS tab** and enter the DNS IP addresses provided by your ISP in the DNS fields.

4. Click the **Gateway tab** and enter a value in the Gateway IP address field. The Gateway IP address value must be the same as the XRouter Pro's IP address; (the XRouter Pro's default IP address is **192.168.1.1)**.
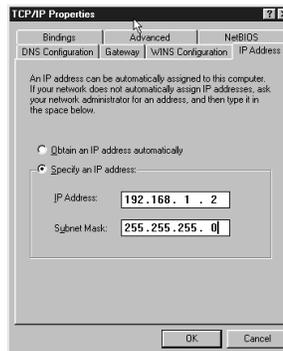
5. After specifying the settings of TCP/IP click **OK** and **restart** Windows to allow the settings to take effect.

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Mac OS TCP/IP Configuration

1. Open the **TCP/IP** control panel.

2. In the **Connect via** menu select the **Ethernet** interface that is installed on your computer.
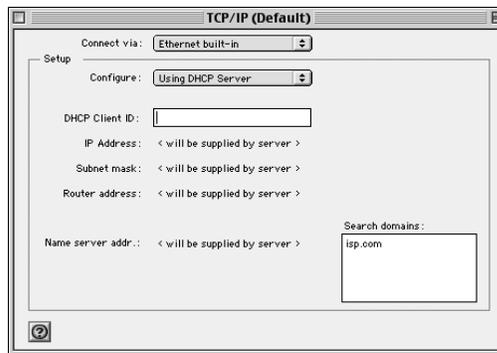
3. In the Configure pull-down menu that appears, select **Using DHCP Server** to allow the built-in DHCP server of the XRouter Pro to assign an IP address and other TCP/IP configuration information to the client automatically. Do this for each client that needs Internet access through the XRouter Pro.

    (**Note:** The DHCP Client ID field is not require to connect to the XRouter Pro. It is normally used to identify computers in a DHCP network. If you desire to input the name of computer in this field, you may.)

4. Close the TCP/IP window and save the changes.

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Assigning TCP/IP Values Manually

If you already have a DHCP server on the network, or if you prefer not using the XRouter Pro's DHCP server to assign TCP/IP values automatically, you can input these values manually.

To enter values for the managing computer's address manually:

1. In the **Connect via** menu select the **Ethernet** interface that is installed on your computer.

2. In the **Configure** menu select **Manually**.

    a. In the IP Address field, enter **"192.168.1.x"** where x is any variable of your choice ranging from 2 - 252.

    (**NOTE**: No two computers on the same LAN can have the same IP address or an IP address conflict will occur.)

    b. In the Subnet Mask field enter **255.255.255.0**.

    c. In the Router Address field enter **192.168.1.1**, the XRouter Pro's default address.

    d. In the Name Server Address field enter the DNS information provided by your ISP. In the Search Domains field enter the domain information provided by your ISP.
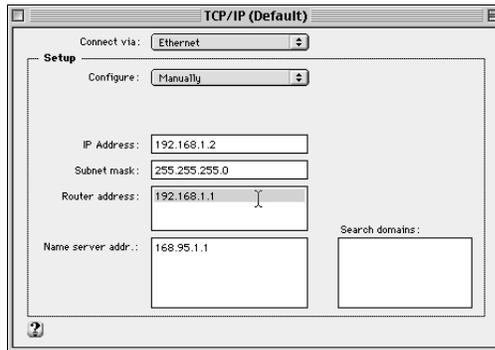
    e. Close the TCP/IP window and save the changes.

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Setting Up the XRouter Pro Through a Web Browser

Now that you have finished configuring the TCP/IP addresses of the client and managing computers, you can begin configuring the XRouter Pro's Internet settings. This can be done through a standard Web browser (such as Netscape Navigator, Netscape Communicator, or Microsoft Internet Explorer).

IMPORTANT: Before following the instructions below you must find out if your ISP is providing one of following IP addressing types:

Dynamic with PPPoE - If your service is dynamic addressing with PPPoE support, you do not need to follow the instructions below. However,you will need to proceed to the "*PPPoE Settings*" section in the *Advanced Configuration* section of this manual.

Dynamic - If your service is dynamic, you do not need to follow the instructions below because the XRouter Pro automatically configures the TCP/IP information provided by your ISP and you should already have Internet access. If this is the case, you are done installing the XRouter Pro and can begin accessing the Internet from any of the client computers.
(**Note**: Some ISPs require the use of a MAC address (hardware address of a network device) to connect to their service. If this is the case, you will need to contact to your service provider and give them the Public MAC address of your XRouter Pro. The Public MAC address of your XRouter Pro can be found on the OnePage Setup of the XRouter Pro. To access the XRouter Pro's OnePage Setup screen, follow the instructions below.)

Static with PPPoE - if your ISP has provided a static IP address or if you would like to make further changes to the advanced features, you will need to enter the Web-based configuration described below to configure the static IP address provided by your ISP. You will also need to use the *"PPPoE Settings"* section in Advanced Configuration section of this manual.

Static - if your ISP has provided a static IP address or if you would like to make further changes to the advanced features, you will need to enter the Web-based configuration described below to configure the static IP address provided by your ISP .

Enter the Web-based configuration:

1. Launch your computer's Web browser.

    (**NOTE**: Netscape Communicator 4.0, Internet Explorer 4.0 or above are necessary for configuring the XRouter Pro.)

2. Type the XRouter Pro's default IP address (**192.168.1.1**) in the <u>URL</u> field. This is the area where you would normally enter a Web site address such as "www.macsense.com".

3. Press **Enter**. The Username and Password window appears.

4. Leave the <u>User name</u> field blank and type "**admin**" as the default password for the XRouter Pro. You can change the password through a Web management page later. Click **OK** to enter the Web management page.

```
╔══════ Enter Your Name And Password ══════╗

    Enter username for MIH-130 at 192.168.1.1:


        Name: [                              ]

     Password: [                              ]


                        [ Cancel ]   [   OK   ]
╚═══════════════════════════════════════════╝
```

 (**Note:** It is recommend to change the default "admin" password of of your XRouter Pro so that others users of the network can not
 have access to the web based configuration of the XRouter Pro. This can done through "*Device Admin*" page of the web based configuration of the XRouter Pro. More information of about the "*Device Admin*" page of the XRouter Pro can be found in the *Advanced Configuration* section in this manual.)

5. The OnePage Setup window appears. Note that this page is divided into two basic sections -- Private IP Address, and Public IP Address.
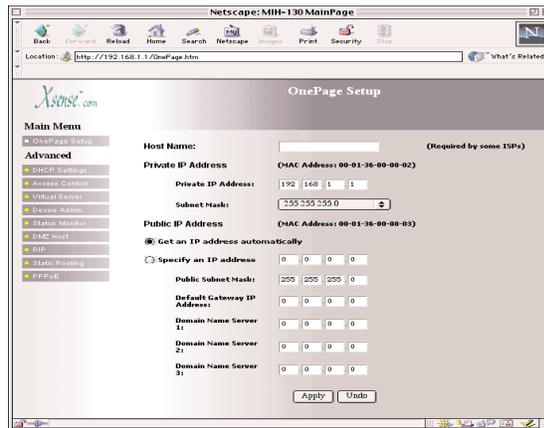
Host Name - This is an optional section. Some ISPs require a host name in order to be recognized by their systems. Your ISP should provide this if needed for their systems.

Private IP Address - This section can be used to change the XRouter Pro's internal IP Address that is visible to the client computers on the LAN. However, we recommend that you do not alter the default IP address (192.168.1.1) unless you need to make modifications to fit your network environment.

Public IP Address - This section can be used to manually enter IP address information provided by your ISP. You will not need to make any changes to the default values in this section if your ISP automatically assigns IP addresses. However, if your ISP has provided you with a static IP address, you will need to enter this information by following the instructions below.

To make changes to the Public IP Address fields:

1. Select **Specify an IP Address**.

2. Enter the static IP address provided by your ISP in the field located immediately to the right of "Specify an IP Address."

3. Enter the Public Subnet Mask provided by your ISP.

4. In the Default Gateway IP Address field, enter the information provided by your ISP. Note that your ISP may refer to this information as a "Gateway/Router IP Address." Also note that this number is not the same as the IP Address value that you entered in step 2.

5. Enter the DNS information provided by your ISP in the Domain Name Server fields. Your ISP should provide at least two unique DNS numbers.

ADVANCED CONFIGURATION

Please refer to the previous chapter on how to enter the Web Management page of the XRouter Pro. The Advanced Menu contains nine sub-menus including DHCP Settings, Access Control, Virtual Server, Device Admin, Status Monitor, DMZ Host, RIP, Static Routing and PPPoE.

DHCP Server Settings

To alter the starting IP Address range, the number of users that are automatically assigned IP addresses on the LAN, or to disable the DHCP server, you must enter the DHCP Settings page to make changes.
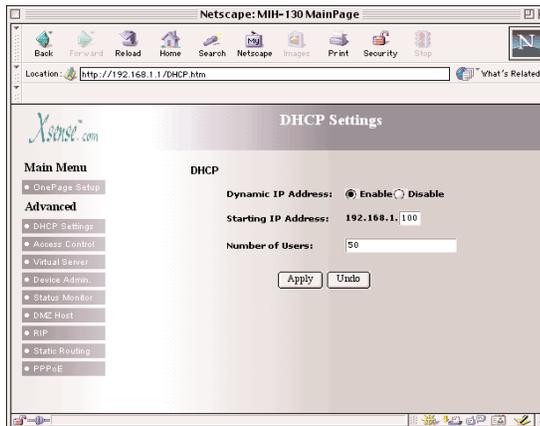
Access Control

The Access Control page in the XRouter Pro can block or allow specified web sites to the entire LAN when enabled. For example, if you wanted to stop users on the LAN from accessing the web site "www.yahoo.com", you would use the Access Control page to block URL access to this site.
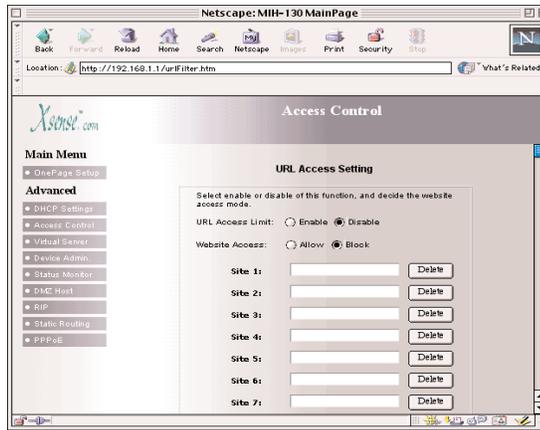
To Enable or Disable the URL access feature of the XRouter Pro, select **Enable** or **Disable** for the URL Access Limit buttons.

To block access to a web site, select **Block** from **Website Access** buttons, then type in the specific URL in one of the **Site** fields. For example, if access to "http://www.yahoo.com" needed to block, you would simply type in **www.yahoo.com** into one of the **Site** fields. All other web sites would still be accessible.

To only allow access to specific web sites, select **Allow** from the **Website Access** buttons, then type in the specific URL in one of the **Site** fields. For example, if access to "http://www.yahoo.com" is needed, you would simply type in **www.yahoo.com** into one of the **Site** fields. By using the Allow feature, only web sites enter into the fields will be allowed. All other web sites will be blocked.

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Virtual Server

It is possible to set up your own Web, FTP, or other type of server on your network for external Internet users to access. Internet users simply need to enter the WAN IP address that has been assigned to you by your ISP. The XRouter Pro will redirect the request of the Internet user to the specified internal hidden IP address of the TCP port request.

(**NOTE:** It will be much more convenient to have a fixed address from your ISP. Failure to do so will result in being assigned a different IP address every time your connection to the ISP is reset.)

For example, if you set up the TCP port 80 (HTTP: Hypertext Transfer Protocol) to be redirected to the IP address"192.168.1.2" on the Virtual Server setting, the request from the external Internet user via HTTP protocol (i.e. acquire Web page from browser) will be transferred through the XRouter Pro to the computer with the IP address "192.168.1.2" on your local network.

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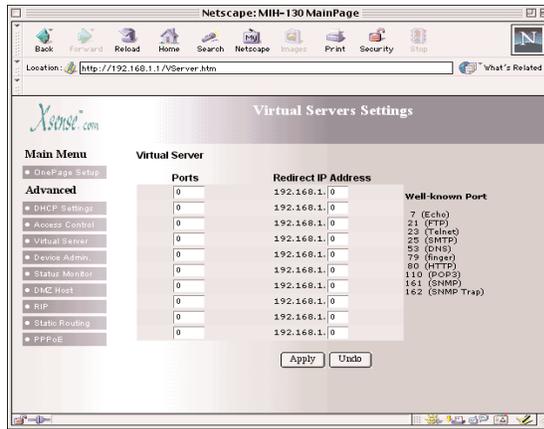
Device Administration

This page displays information about the firmware version of this XRouter Pro. You can also change the password, reset the device, disable or enable external administrative access to the web based configuration of the XRouter Pro.
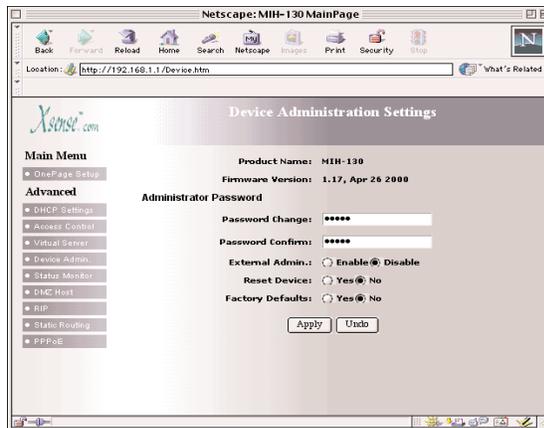
To restore the XRouter Pro's Factory original defaults, select **Yes** and then click **Apply**.

To Enable or Disable External Admin access to the XRouter Pro, select **Enable** or **Disable**.

> **Note:** It is recommend to change the default "admin" password of of your XRouter Pro so that other users of the network can not have access to the web based configuration of the XRouter Pro. This is especially recommend if you intend to administer the router from outside your network and have External Admin feature enabled.

Status Monitor

This page provides information on the working status of the XRouter Pro.

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DMZ (DeMilitarized Zone) Host

This feature will open all in/out accesses for one LAN computer. This is useful for machines that host TCP/IP services that should be fully exposed to the public network. For example, Internet Gaming, NetMeeting, Timbuktu, or other types of services may require this type of access. Please enter one LAN IP Address below. Activate this feature only when required. (Entering "0" designates inactive)

RIP (Routing Information Protocol)

This feature will allow your XRouter Pro to send and receive RIP packets to other routers on the Internet. RIP is a protocol being used by some routers on the Internet. By sending and receiving RIP packets, your XRouter Pro will learn the routes used by neighboring routers. This can increase your XRouter Pro's routing performance. The XRouter Pro supports RIP-1, RIP-1 compatible, and RIP-2.

RIP- 1: RIP 1 is used to exchange RIP packets with older routers that do not support RIP 2.

RIP-1: compatible - RIP-1 compatible allows the broadcast of RIP-1 and RIP-2 multicast packets. It can can also received both types.

RIP-2: RIP-2 is used to exchange RIP packets with newer routers. When using RIP-2, you can only exchange information with RIP-2 routers.

To enable RIP on the XRouter Pro, select the type of RIP you would like to enable from the TX(transmit) and RX(receive) pull-down menu's.

The RIP feature is considered an advance feature, and is not required to use your XRouter Pro. If you are not familiar with RIP, you may not want to enable this feature. By enabling the TX selection of RIP, you are sending information about your router to the Internet. Sharing information about your router to the Internet may or may not be desired

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Static Routing

The Static routing feature of the XRouter Pro allows the LAN to communicate with another router on the LAN and with their respective LAN segment. By setting up static routes, computers on the XRouter Pro's immediate LAN may utilize another router's LAN and at the time allow the other router's LAN to utilize the XRouter's Pro LAN. See the example below for the setup of a Static route.
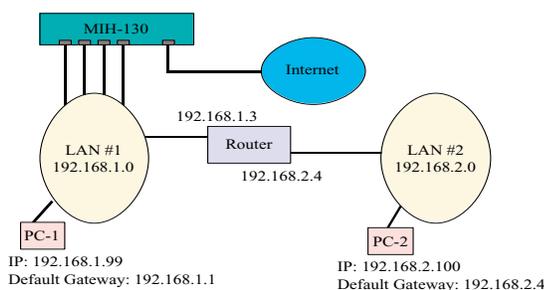
To achieve the static route in the example above, the following information would be inputted into the Static Routing page of the XRouter Pro:

Static Routing:	1--
Destination LAN IP:	192.168.2.0
Subnet:	255.255.255.0
Default Gateway:	192.168.1.3
Hop Count:	1
Interface:	LAN

In the example above, PC-1 would have access to LAN#1, LAN#2 and the Internet. Where as, PC-2 would have access to LAN#1 and LAN#2, but not the Internet. In order for PC-2 to have Internet access, a second XRouter Pro or another router with static routing capabilities would need to be used and configured.

Static Routing is considered an advanced feature and is not required for basic configuration of the XRouter Pro.

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PPPoE Settings

Some ISPs require the use of PPPoE to connect to their network. If your ISP uses this style of connection, you will need your input the username and password your ISP has provided you.
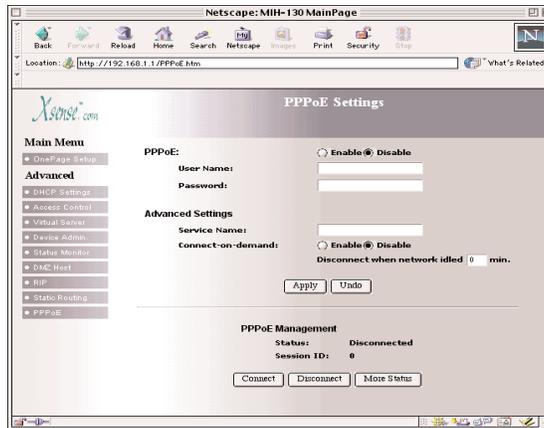
Username - In this field you will need to input the username your ISP assigned you.

Password - In this field you will need to input the password your ISP assigned you.

Service Name - This field is optional and is not needed for all ISPs. Input the Server Name in this field if your ISP requires it.

Connect-on-Demand - This feature allows the router to initiate a connection with the your ISP when a Internet request is made to the XRouter Pro. For example, opening an Internet browser and request-ing a web site initiates the XRouter Pro's Connect-on-Demand feature if enabled. We recommend having this feature enabled if you do not wish to enter the web based configuration and manually connecting every time your need Internet access.

Disconnect when network idle - This field allows you to input the idle time required to disconnect your XRouter Pro from your ISP if no

activity is present. For example, if you set the idle to "10", then the XRouter Pro will disconnect your PPP connection after 10 minutes. To use this feature, input the time in minutes. (**Note**: To have the XRouter Pro not disconnect automatically input "0".)

PPPoE Management - This section provides status information on your PPP connection and allows you manually connect and disconnect your PPP connection. To manually connect Click **Connect,** and to manually disconnect, Click **Disconnect**.

Please note: If you are experiencing problems connecting via PPPoE to your ISP, please verify the that your ISPs connection is indeed working by using your computer directly with your Internet line. If you computer is working directly plugged into your Internet line, please check above settings and cables connecting your XRouter Pro again.

Firmware Upgrade

Xsense is continually improving the firmware (software programmed on a PROM) in each of its products. The XRouter Pro is shipped with the most up to date software available at production time. If a firmware upgrade becomes available, it will be posted in the "Service and Support" section of our Web site. To upgrade the XRouter Pro, you will need the TFTP client and the firmware file named **"xxxxx.bin."** These two files can be found on our Web site at www.macsense.com. Follow the upgrade procedure listed below.

1. Download these two files from our Web site: TFTP client, and **"xxxxx.bin"**

   Note: These files are actually inside a single compressed folder on our web site. This means that you would only download one file. Once downloaded and decompressed, a folder will contain the needed files.

2. Double-click the TFTP client icon to run the program. Enter both the IP address of the XRouter Pro and your password.
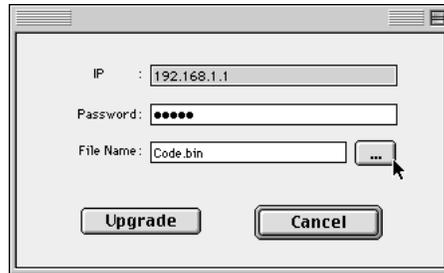
3. Click the button beside the <u>File Name</u> field. A window appears. Select a location of the firmware file **"xxxxx.bin"**.

4. Click the **Upgrade** button to begin the upgrade process. After the upgrade is complete, remember to reset the XRouter Pro by unplugging the device and then plugging it back in.

   (NOTE: Keep the firmware file name **"xxxxx.bin"** unchanged or the TFTP client software won't recognize it.)

5. If the upgrade has failed, the Ready/Test LED will be blinking on the XRouter Pro. If this happens, try repeating steps 2 - 4 of this procedure.

TROUBLESHOOTING

This chapter provides solutions to problems that may occur during installation and operation of the XRouter Pro MIH-130.

1. *The Link LED is off.*

    • Check that all connectors are firmly plugged-in.

    • Check the power adapter making sure it is plugged into an electrical outlet.

2. *Can't connect to MIH-130 XRouter Pro via Web browser.*

    • Verify that the IP address 192.168.1.1 has been correctly entered in the URL field.

    • Check the network cable connection and LAN LED indicator on the XRouter Pro.

    • Check out the TCP/IP setup on your client. Type "winipcfg" on DOS prompt under Windows 95 or open the TCP/IP control panel on the Mac OS platform. The client should get an IP address of 192.168.1.x (where "x" is from 1 to 252.)

4. *Can't connect to MIH-130 XRouter Pro to the Internet.*

    • Check whether your ISP requires the use of the MAC address of your router. Some ISPs require the MAC address of the device your connecting to your their network. If this the case, you will need to contact your provider and supplied them with the correct MAC address of the router.

    • If you are using a Static IP address that your ISP supplied, verify that the IP address is correct and has been correctly entered in the URL field.

    • Check your cable between the all devices.

APPENDIX A - Specifications

Standards Compliance

IEEE 802.3 10BASE-T and 100BASE-T

TCP/IP, DHCP, DNS

WAN Interface

One 10BASE-T RJ-45 port

LAN Interface

Four 10/100 BASE-T RJ-45 ports

Web management

Yes

LED Display

Power, Link/Activity for WAN/LAN ports, Collision/Partition for LAN ports

Environment

Operation Temperature	0~45°C (32~113°F)
Storage Temperature	-20~70°C (-4~158°F)
Humidity	0~90%

Dimensions

LxWxH (mm)	142x236x46
LxWxH (in.)	5.59x9.29x1.81

Power

AC9V, 1A

Certifications

EMI/EMC - FCC Class B / CE Mark Class A / VCCI Class 1

Safety - CUL(UL&CSA)/LVD/TÜV

APPENDIX B - Hardware Description
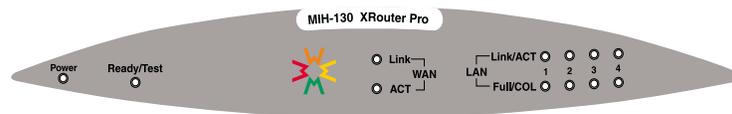
Power	green	Indicates that there is power to the unit.
Ready/Test	red	Flashes during boot up

WAN Port

Link	green	Indicates proper a connection with the Internet Ethernet connection.
Activity	orange	Flashing LED indicates that data packets are flowing through the WAN port.

LAN Ports

Link/ACT	green	Solid LED indicates a proper 100BaseT connection with a computer and a flashing LED indicates that there is activity on this Ethernet port
	orange	Solid LED indicates a proper 10BaseT connection with a computer and a flashing LED indicates that there is activity on this Ethernet port
Full/Col	orange	Indicates that the connection is Full Duplex
	red	Indicates that there is severe collision at this port and being isolated from the other ports temporarily.

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Rear Panel Description
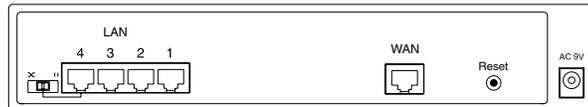
LAN Ethernet Ports - Four 10/100BASE-T Ethernet network (RJ-45) ports used for linking hub/computer in a Local Area Network to the XRouter Pro.

WAN Ethernet Port - One Wide Area Network port for connecting the XRouter Pro to the Internet via a cable or DSL modem.

Reset Button - Used for resetting the XRouter Pro's IP Address information and user password to the factory default settings.

5VDC Power Adapter Receptacle - Plug the power adapter cable into this port to supply power to the XRouter Pro unit.

Uplink Switch - Used to determine the configuration of the XRouter Pro's LAN port No. 4. Choose either parallel (normal) for connecting LAN computers to the XRouter Pro or crossover mode (uplink) for daisy-chaining a series of hubs to the XRouter Pro.

APPENDIX C - Glossary

DHCP

DHCP is a protocol for automatic IP configuration. Client side computer can get one IP from DHCP server automatically. Using DHCP can save the effort of setting IP for every LAN computers.

Dynamic IP address

A dynamic IP address is an IP address that is given out automatically from a DHCP Server to client computers or routers on a LAN or WAN.

Domain Name

A name that identifies one or more IP addresses. For example, the domain name "microsoft.com" represents many IP addresses. Domain names are used in URLs to identify particular Web pages. For example, in the URL http://www.pcwebopedia.com/index.html, the domain name is pcwebopedia.com.

IEEE

Abbreviation of Institute of Electrical and Electronics Engineers, pronounced "I-triple-E". Founded in 1884, the IEEE is an organization composed of engineers, scientists, and students. The IEEE is best known for developing standards for the computer and electronics industry. In particular, the IEEE 802 standards for local area networks are widely adopted.

Internet

A global network connecting millions computers. As of 1998, the Internet has more than 100 million users worldwide, and that number is growing rapidly. More than 100 countries are linked into exchanges of data, news and opinions.

IP Address

An identifier for a computer or device on a TCP/IP network. Networks using the TCP/IP protocol route messages based on the IP address of the destination. The format of an IP address is a 32-bit numeric address written as four numbers separated by periods. Each number's range is from 0 to 255. For example, 1.160.10.240 could be a legal IP address.

ISP

Short for Internet Service Provider, a company that provides access to the Internet. For a monthly fee, the service provider gives you a software package, username, password and access phone number. Equipped with a modem, you can then log on to the Internet and browse the World Wide Web and USENET, and send and receive e-mail.

Local Area Network (LAN)

A computer network that spans a relatively small area. Most LANs are confined to a single building or group of buildings. However, one LAN can be connected to other LANs over any distance via telephone lines and radio waves. A system of LANs connected in this way is called a wide-area network (WAN)

MAC Address

Short for Media Access Control address, a hardware address that uniquely identifies each node of a network. In IEEE 802 networks, the Data Link Control (DLC) layer of the OSI Reference Model is divided into two sublayers: the Logical Link Control (LLC) layer and the Media Access Control (MAC) layer. The MAC layer communicate directly with the network media. Consequently, each different type of network media requires a different MAC layer.

PPPoE (Point to Point Protocol over Ethernet)

PPPoE is Point to Point Protocol that uses Ethernet to authenticate and connect a user's computer or router to the ISPs network.

Static IP address

A static IP address is an IP address that does not change and is manually set in client or computer router in a LAN or WAN.

TCP/IP

Acronym for Transmission Control Protocol/Internet Protocol, the suite of communications protocols used to connect hosts on the Internet.